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IoT-cloud authorization and delegation mechanisms for ubiquitous sensing and actuation

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Abstract

© 2016 IEEE. In the roadmap for the implementation of ubiquitous computing, ubiquitous sensing and actuation is a milestone still to be reached. It refers to providing sensing and actuation facilities anytime and everywhere. This does not just imply to interconnect sensors and actuators through the Internet, but also and mainly to provide this facilities. IoT-Cloud computing paradigms such as the sensing and actuation as a service one could be a proper way to address this problem. In past work we developed an SAaaS framework extending OpenStack with specific functionalities for resource constrained nodes, Stack4Things. In this paper we focus on access control, authorization and delegation mechanisms which are basic mechanisms for the implementation of the UbSA vision. Thus starting from Stack4Things, we describe how we adapted and extended mechanisms provided by OpenStack, with specific regard to Keystone, with new functionalities for delegation and access control. A use case in the smart city scenario of #SmartME describes the proposed solution in practice.

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Keywords

Access control, Cloud computing, Cloud of things, Delegation, IoT, Keystone, OpenStack, Sensing and Actuation as a Service

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